

DESCRIPTION

ELECTRON EMISSION DEVICE HAVING CLEANING FUNCTION

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-- This Application is a National Phase Application under 35 U.S.C. 371 claiming the benefit of PCT/JP04/00182 filed on 01/14/2004, which has priority based on Japan Application No. 2003-006176 filed on 01/14/2003. --

5 TECHNICAL FIELD

The present invention relates to an electron emission device for emitting electrons using an electron emitter that includes a semiconductor layer. More specifically, the present invention relates to an electron emission device capable of cleaning fine particles
10 attached to a surface of an electron emitter when operating at atmospheric pressure to charge an object.

The electron emission device according to the present invention is applicable to an electron emission device used for charging a photoconductor of an apparatus, e.g., a laser printer or a digital copying
15 machine, which employs electrophotography.

BACKGROUND ART

As a conventional cold cathode electron emitter, there are known a Spindt type electrode, a carbon nanotube (CNT) electrode, and the like.
20 Application of these electron emitters to the field of field emission display (FED) has been considered. Each of these electron emitters applies a voltage to an acute portion to develop a strong electric field of about 1 GV/m, and emits electrons by a tunneling current.

As an example of an idea of causing such an electron emitter to
25 operate in the air, thereby applying the emitter to a charger or an